Canadian Journal of
PUBLIC HEALTH

VOLUME 41 TORONTO, DECEMBER 1950 NUMBER 12

The Role of Epidemiology in Venereal Disease Control

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STATEMENTS have appeared in the press from time to time during the past year or so suggesting that the war against venereal disease has been virtually won.

Such statements have been based largely upon the recognized effectiveness of penicillin and other antibiotics in treatment. It is not enough, however, to be able to cure those patients who report to us. For every discovered case there is probably at least one that remains hidden and, therefore, is a source of danger in spreading the disease.

No matter how good our contact-tracing may be, a significant proportion of contacts remain unidentified or unexamined. Some infected individuals, though aware of their infections, are unco-operative and conceal their infections, or keep changing their own identity and their environment, leaving a trail of infection behind them. There are some—and this applies particularly to females—who are suffering from subclinical infections of which they are unaware. There are also those women who come in for examination as a result of conscience or contact, but in whom no infection can be found. Some of these women may, indeed, be infected, but owing to the recognized difficulties of diagnosis in females, are sent away and continue to disseminate their infection.

All these problems become most serious and most difficult of solution in those localities where there is a large shifting and transient population group, as in seaport towns, industrial areas, or centres of logging and fishing.

Penicillin has admittedly enabled us to deal rapidly and effectively with

Presented before the Venereal Disease Control Section at the thirty-eighth annual meeting of the Canadian Public Health Association, held in the King Edward Hotel, Toronto, June 12-14, 1950, in conjunction with the first meeting of the Ontario Public Health Association.

known cases of infection, but there still remains in most large urban centres a "pool of infection" which can continue to spin out to the community at large. It is this pool of infection which has engaged our attention in British Columbia in recent times, and much thought has been given to the location of that pool in the community, and to the means whereby it can be reduced or eradicated.

In order to obtain a clearer understanding of the problem, various studies have been carried out, for the purpose of estimating and correlating the more important underlying factors in the maintenance and spread of venereal infection. Similar studies have been carried out elsewhere, but it was felt in British Columbia that surveys carried out locally might be useful in providing information on conditions peculiar to the area, as well as in stimulating the efforts and interest of all those who comprise the team of workers in venereal disease control.

Apart from the statistical evaluations normally carried out, special studies have been made regarding the type of person—generally speaking—who acquires a venereal infection: his educational attainments, and whether or not he has received any early sex education; his home and family background; the nature of his employment; how he takes his pleasures and relaxation; the localities he frequents and where he acquired his infection; and whether or not he has a police record, as well as much other relevant information.

Besides providing us with a useful picture of social pathology, these studies have given us certain indications of the directions in which we can organize our attack upon the spread of infection.

Broadly speaking, our methods of attack fall into two categories:

1. Those in which we have only an indirect and very limited influence—the long-term policies. These groups include improvement in general High School education—particularly in the arts, hobbies, family and community relationships, moral responsibilities and health; lay education in general, and attention to social and community problems, such as housing, slum-clearance, unemployment, etc.
2. Those in which we formulate and carry out the program.

The usual epidemiological procedures are well known and will not be discussed at this time.

There are certain other aspects, however, to which we in British Columbia have been devoting considerably more attention recently.

In order to understand the basis of our thinking, it would perhaps be as well to indicate some of our findings in recent studies carried out by the British Columbia Division. These are:

1. The infection rate in both single and married females appears to fall rapidly after the age of 30, and by the age of 50 has fallen to a very low figure. The rates for single males, on the other hand, though falling steeply, still remain at a relatively high level even to comparatively old age.
2. In the 35 to 40 age group, the proportion (in rates per 100,000) of infected single males to infected single females has reached the figure of 7:1.

Two factors may be working towards this state of affairs:

(a) The greater difficulty of diagnosing gonorrhoea in the female than in the male.

(b) The concentration of the "pool of infection" in the promiscuous type of female.

It may be mentioned here that in a study of 890 infected patients (536 males and 354 females), 46 per cent of the females and 36 per cent of the males were repeaters, but where the male repeaters averaged 2.4 infections each, the female repeaters averaged 3.4 infections each.

It seems that the male is the more generally promiscuous animal of the species, but the promiscuous female is more intensely promiscuous. This, of course, is largely due to the activity of amateur and professional prostitutes.

3. The greatest numbers of infected patients appear to have come from, or had their contacts in, certain definite localities—mostly in the more distressed and unsalubrious areas of Vancouver (the city from which our material was drawn).

   This finding merely confirmed our previous impression that large numbers of our cases were coming from a fairly localized pool of infection.

4. In an unselected group of 150 Vancouver Clinic patients (male and female) between the ages of 20 and 25, suffering from a venereal infection, over 40 per cent had police records, as alcoholics, drug addicts, delinquents, vagrants or outright criminals—the anti-social group.

All this information was not necessarily new, but served to impress upon us more forcibly the directions in which we were most likely to achieve some additional measure of success. Examination of the population at large would not be possible, and in any case would be highly uneconomical. It was, therefore, felt that much more was to be gained by attacking the pool of infection in those groups and localities where the problem is most acute. Where mass blood testing is to be undertaken at all, it should be confined to those groups where experience shows that we are likely to find a reasonably large number of cases for our efforts. In Vancouver, it was decided about two years ago that since most of our venereal disease cases were coming from the poorer districts of the city, and since the percentage of infected persons with police records was high, useful results might be expected by concentrating our efforts in those poorer districts and among the so-called anti-social groups.

Fortunately, the Chief of Police was sympathetic and anxious to assist in every possible way. A scheme was therefore worked out by Dr. G. R. F. Elliot, my predecessor, and the Police Department, whereby a public health nurse employed at the Vancouver Clinic attended the Vancouver City Police "lock-up" each morning at 8:30—i.e., before the Court convened—for the purpose of taking blood Kahns from all female inmates admitted to the "lock-up" (for any purpose whatever) during the previous day and night.

The results of this procedure were so promising that these examinations were soon extended to include pelvic examinations and smears for detection of gonococcal infections.

Examinations were not compulsory, although the machinery was available to make them so in the case of those women who were known to be prostitutes. Fortunately, the tact and understanding of the nurse is such that it is rare for a woman to refuse examination; indeed, such is the esteem in which this nurse is held by the majority of female frequenters of the City Gaol, that many of them will, when in trouble, report to her for an examination, even without previously going through the formality of being locked up.

Perhaps it should be mentioned that the Vancouver City Lock-up is situated in the heart of that area from which the majority of the venereal disease of the city is known to spread. In that respect the locality is ideal.

The female examination centre proved such an outstanding success as a means of finding new cases—as well as old cases who had lapsed from treatment or observation—that it was decided to open a similar centre for male inmates. This also has functioned on a voluntary basis and is confined to blood examinations alone. Less than 5 per cent of the inmates have refused to allow their blood to be taken.

The following figures for this examination centre are interesting:

> On the male side, 3,444 persons were examined up to March 1950. Of these, approximately 9 per cent had positive blood tests.
>
> In the female clinic, 2,054 persons were examined. Of this number, 976 or 47.5 per cent showed evidence of a venereal infection—i.e. they had either positive smears or positive blood. Strange to relate, the figures for 1949 are almost identical in all respects with those for 1948.

There is, however, a striking difference between males and females, in that the great majority of men with positive blood tests were previously known to the Venereal Disease Control Division, less than 3 per cent of the total number accounting for *new* cases.

In the case of the women, the high figures are due largely to newly discovered gonorrhoeal infections.

When these figures are compared with those for the general population at large (an average of 0.2 per cent with positive blood), it will be seen that this gaol examination centre has proved well worth while. It has struck at the two most potent factors in the spread of venereal infection: the anti-social type of individual—the delinquent, the prostitute, the drug addict and the alcoholic—and the locality in which the pool of infection is most concentrated—the area of cheap rooming houses and hotels, slums, squalor and depression.

So successful has been our effort in Vancouver that a similar centre has now come into operation at a second city in the province, with the hope of a third following in the near future.

It is our present intention to limit our Police Court examination centres to these three cities, as our figures have shown that these are the areas in which our principal pools of infection lie. It would not be an economical proposition to open similar examination centres in those areas where venereal disease is uncommon, where crime incidence is low, and where there is no distress problem.

Before concluding, it might be as well to mention another aspect of this problem which has lately been occupying our attention.

Reference has already been made to the greater difficulty of diagnosing gonococcal infection in the female than in the male. In order, if possible, to reduce the chances of this being a factor in the spread of infection, it was decided that all women named once as contacts to proved infection should be given treatment, whether or not their smears were positive. This may be bad for our statistics at the present time, but we have high hopes that we shall in due course reap the benefits of this course of action. Indeed *any* active and effective case-finding program is bound, temporarily, to have an adverse effect upon statistical figures, but should pay good dividends in the course of time.

Mention was also made of some "women of doubtful virtue" who frequently visit the Police Court examination centre voluntarily for a venereal disease examination when their conscience, or their health, bothers them. This has led to some speculation as to what happens to prostitutes who succeed in avoiding the arm of the law, and who do not report voluntarily. There must be many of them at work who are rarely or never seen. Many of them must also be scattering their infections through the populace.

The Law does not recognize prostitutes, for their activities are illegal. On the other hand we, who are working in venereal disease clinics, must recognize the fact that a number of our clients *are* prostitutes and that they constitute an essential part of our problem. Moreover, we know, and the police know, the identity of many of these prostitutes.

How, then, is this problem to be met? Should there be a clinic available to them in their own area during the evening hours, where anyone who so wishes could report for examination and treatment? This is a project which is at present on our files for serious consideration.

There is a certain city, outside Canada, where the police unofficially "persuade" women to report for examination if there is reasonable suspicion that they are prostituting, but where no proof is available. This appears to be a dangerous interference with human liberties, but is at least realistic.

It is felt in Vancouver that the opening of an evening clinic—from 6 to 11 p.m.—in the area of highest incidence might be worth considering on an experimental basis. A daytime clinic has been started in this area under the auspices of the Vancouver City Health Department, and is already functioning well. A further extension of this will depend largely upon the availability of accommodation, personnel and funds, but an effort will be made ultimately to give the scheme a trial.

It is our belief that the elimination of venereal disease as a community problem is not possible with penicillin alone. The epidemiological approach has now become of paramount importance, for while a large undiscovered pool of infection exists we cannot hope to fulfill our purpose of eliminating this scourge from our midst.

Sampling Techniques: Their Application to Sickness Surveys

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STATISTICS is fundamentally the study of aggregates of individuals rather than of individuals, whether the individual is an observation, a measurement, or a person. A sample, in turn, is a part of an aggregate chosen to represent the whole aggregate; it will not be representative if units of a particular type are chosen deliberately to the exclusion of other types, or if the process of selection is such that certain types of unit are favoured at the expense of others.

Normally, the natural units are dissimilar in various respects. Because of this dissimilarity, neither haphazard, nor casual, nor deliberate selection can be expected to provide a representative sample. Methods which reflect the judgment of the persons choosing the sample would be rejected in favour of methods which would ensure that each of the individuals in the universe would have an equal and independent chance of being included in the sample. This method of selection provides a random sample. The importance of the word "random" in this connection must not be overlooked. A sample is not random simply because the person selecting the sample is not conscious of any bias. Randomness must be deliberately introduced into the selection process by the use of a table of random numbers or by some equivalent device.

In order that a sample will give results which are sufficiently representative of the whole aggregate, the errors introduced by the sampling process must be sufficiently small so as not to invalidate the results. The size of the "random sampling errors" will depend on the size of the sample, on the variability of the material, on the sampling procedure adopted, and on the way in which the results are calculated. It is fortunate that with a proper process of selection the average magnitude of the random sampling errors can be calculated from the detailed results obtained from an actual sample.

With the development of methods of evaluating the errors and relative efficiencies involved in sampling methods, sampling has progressed from a speculative and uncertain procedure to one having definite calculable precision. It has become a reliable method in which full confidence can be placed.

Procedure

In the planning and execution of a sample survey a general procedure is

Presented before the Vital Statistics Section at the thirty-eighth annual meeting of the Canadian Public Health Association, held in the King Edward Hotel, Toronto, June 12-14, 1950, in conjunction with the first meeting of the Ontario Public Health Association.

followed. A rigorous definition of the population to be surveyed is necessary. The data to be collected, which is dependent on the purpose of the enquiry, should be clearly defined. No essential data should be omitted, nor should non-essential data be included which would never subsequently be examined. There is perhaps an exception to this requirement. In a survey where the questions are of little or no interest to the respondent, it is often advantageous to insert questions that will evoke the respondent's interest, even though the questions themselves may be irrelevant to the main purpose of the survey.

Difficulties in the construction of the schedule itself may be reduced by having the schedule reviewed by a disinterested person, and by conducting a test survey in the field before the actual survey begins. The test survey should bring to light ambiguously worded questions and should reveal to some extent the types of query that a respondent may make about the meaning of certain questions. Especially in questions of opinion the wording must be "neutral" so as not to influence the respondent to give one answer rather than another.

The sampling units, which are the elements into which the population is divided for sampling, vary in size and in constitution according to the survey. The best size of unit and the best method of selecting the sample is dependent upon the desired degree of accuracy obtainable at minimum cost.

Once the sample is drawn, the manner in which the data are collected may be indirect, that is, by mail, telephone, or telegraph; or direct, that is, by personal interview. A combination of direct and indirect may be used, but in using the indirect method the problem of non-response is of major importance.

Lying outside the field of statistics is the organization of the field work. The reliability of the sample estimates is dependent upon the efficiency and competency of the enumerators and supervisors. Efficient training of the enumerators and exact supervision of the field work is essential. Spot-checking of the quality of the results may be effected by re-interviewing sections of the sample in the field.

Sources of Error

In connection with a sample survey there are three main sources of error which will affect the accuracy of the sample. First, there is the error due to taking a portion of the population, rather than the total aggregate. This is the sampling variation, or random sampling error, to which a limitation may be fixed.

Secondly, there are the errors in recording which may arise from mistakes, biases or dishonesty on the part of either the enumerator or the respondent.

Thirdly, there are the physical fluctuations in the unit which occur when the survey continues over an extended period; for example, the change in the population of a city over a year or the change in a voter's opinion as to whether he will vote and, if he votes, whom he will vote for.

The last two sources of error are as prevalent in a complete census as in a sample, and in a census may be of greater magnitude. It is inadvisable, then, to increase the sample to an almost unmanageable size in order to reduce the sampling fluctuations, when the recording errors may greatly overbalance the

sampling errors. It would be better to attempt to reduce by some means the errors in recording.

Sickness Survey Samples

Following this procedure, household samples have been designed for Sickness Surveys in the provinces of Canada. The surveys will continue over a twelve-month period and will give estimates of:

(1) The incidence and prevalence of illnesses with rates of occurrence greater than 2 per hundred per year.
(2) The amount of medical care.
(3) Expenditures for health care.
(4) Total volume of sickness.

The surveys are intended primarily to provide the provinces with information to be used in planning the extension of public health programs and are also expected to encourage public health authorities in the provinces to continue the development of studies of this nature as part of their overall health programs.

The acceptable sampling error was set at 20 per cent. This means that if on the basis of the sample it is estimated that the number of accidental injuries in a particular province during the survey year is 20,000, then taking only the sampling error into account, the actual number is not less than 16,000, and not more than 24,000. The enumerative error, which cannot be estimated, may be appreciably larger than the sampling error, especially in the rural sections.

From the household sample it will be possible to estimate the number of days of illness. However, the information on the duration of illness may be unduly affected if there is a large number of persons in the sample who were ill before the survey began, and the illness continued throughout the total period of the survey. When the survey is completed, this factor can be taken into account when the estimates of duration of illness are made.

Tabulation of the data into the four classifications—

(1) non-disabling illness,
(2) disabling illness,
(3) hospitalized illness,
(4) illness under medical care—

can be obtained without serious error, on a percentage basis.

From the volume of data on illnesses, a further subdivision can be made with respect to predetermined definitions of new illness, continued illness and recurrent illness.

Analysis of the data may also be made with respect to certain social factors—for example, age group, sex, occupation, size of household, etc.—provided that the classification within these groups is not too detailed and is such that each class includes a minimum number of people. Tabulation of the volume of sickness and medical expenditures according to three or four classifications of size of household will show whether there is a relationship between size of household and illness and if such a relationship exists, what, roughly, is its direction and

amount. Such an indication seems an essential preliminary to a more reliable study which would determine exactly the curve of relationship between sickness and household size. It would be wasted effort to do a large survey to attempt to establish the curve in detail, only to find that none exists. One would thus relegate to possible later investigations such questions as whether the five-person household has different rates of sickness from the six-person household, and whether there was a relationship at certain points of the range of household size and no relationship, or a different one, at other points.

It must be realized that in any such statistical correlation as is here envisaged the importance of dealing with the appropriate variables is crucial. If, for instance, it was not size of household but rather the number of persons in the office at which the respondent worked, or sanitary conditions in the office, the correlation with household size might be more misleading than helpful. Successive surveys are needed to obtain more detail on questions found to be pertinent in the preceding survey.

The point on which a small size of sample will restrict the analysis is where an attempt is made to find which particular kinds of illness are related to size of household, occupation, or other factors. It will not be possible to ascertain relationships among minor illnesses and these variables from the present surveys.

Classification of the sickness data with respect to occupations as specific as lawyers, doctors, etc., will not be possible although analyses may be done with respect to broad occupation classifications: labourers, professional men, office or white-collar personnel. These tabulations may be used to ascertain if a relationship exists between illness and occupation.

The sample will give estimates of the average number of "doctor's visits" per type of illness, as well as estimates of the days of "nursing care" and the number of "hospital admissions". Estimates of the average "household expenditure" and the average "expenditure per person" may be obtained from the sample data, as can the totals of "doctor's services".

We might ask "Can we obtain accuracy in medical diagnosis from a household survey?" Obviously we cannot! It is agreed, however, on the basis of the trials that have already been carried out, that sufficient accuracy will be obtained to answer many questions now unanswered on the problems of sickness in the provinces of Canada. Considering the results which will be satisfactorily given against the background of information now on hand on sickness, it appears that the sample will furnish some valuable new material.

Selection of the Sample

The best method of selecting the sample cannot be uniquely determined by sampling theory. One would choose that sample design which would produce results of maximum reliability at a minimum cost.

A simple type of restriction on the sampling process which does not introduce bias into the results and yet substantially reduces the random sampling error is that known as stratification. In a stratified sample the population has been subdivided into groups or strata such that the units in each stratum are as similar as possible.

The design of the Sickness Survey in most of the provinces is basically the same, with variations in the stratification to suit local conditions. As an example, the proportionate or self-weighting sample for Nova Scotia, which is part of the Maritime Region, was drawn from the population of private households, excluding Indian reserves, military centres, hospitals, institutions, hotels, etc. The 1941 Census of Canada provided population statistics for the counties and census subdivisions of Nova Scotia. In addition, the distribution of population with respect to ethnic origin was available, as was the average farm income for the rural areas. These two factors were used as bases for stratification. It should be noted that stratification with regard to factors that are not highly correlated with the characteristics to be measured does not in any way bias the sample; it is merely a means of grouping the counties or districts into units, from which the sample may be chosen.

The metropolitan areas, as defined for the Canadian labour force survey, were given special consideration. The metropolitan areas are those cities with the essential urban population near them whose total population is greater than 30,000. Each metropolitan area comprises a separate stratum and 'multi-stage sampling' was applied. A sample was chosen from lists of city blocks, and segments (which are subdistricts in the peripheral area); the households in the chosen blocks and segments were listed, and from these prepared lists a random sample of households was selected.

The counties in the remainder of the province were stratified according to contiguity and the distribution of French and British population. Six strata were thus formed with populations of the order of 60,000 and within each of these six strata rural areas and urban centres formed a further division.

The rural areas were again subdivided into units which comprised single, or contiguous, groups of census subdivisions whose total population was of the order of 2,000 persons. These primary sampling units were then allocated to substrata on the basis of high and low average farm income, and from each of these substrata a random selection was made. For the selected sample units culture-data maps were used for purposes of clustering.

Within each stratum, the organized urban centres, with the exclusion of the metropolitan centres, were listed and a probability sample chosen.

The sample for Nova Scotia is comprised of twelve rural sampling units, six urban centres and the metropolitan areas. It is a 0.5 per cent sample incorporating approximately 700 households.

With the exception of Newfoundland, this method of sampling and stratification has been used in the other provinces.

Sample for Newfoundland

As the Province of Newfoundland has not a significant farm population, the design of the survey is somewhat unusual. The total population of the island is small, totalling some 322,000, and is spread for the most part in small scattered communities around the coastline, leaving the interior of the island almost uninhabited. More than 90 per cent of the people live on, or near, the coast and the only inland settlements are found along the railways in towns located in the

mining and forestry industrial areas. Fifty per cent of the people live in some 1,200 settlements where the population of each is less than 500 persons and there are approximately only 100 places with a population of more than 500. With the exception of the northern shores of the Avalon Peninsula, the settlements are well-scattered and are located along the bays and around the islands fringing the shore.

The sample for Newfoundland was drawn from the population of private households, excluding, as in Nova Scotia, military centres, hospitals, institutions, hotels, etc., and, in addition, the district of Labrador, with a population of 5,500.

The Census of Newfoundland, taken in 1945, provided population statistics for the settlements in the twenty-five districts of the province, but information with respect to ethnic origin or average income was not available for the settlements, which form the primary sampling units. The districts of Newfoundland were grouped into six strata according to the main field of occupation, and within each stratum one district was selected. The largest urban centres, each of which was sampled, formed a seventh stratum.

In the six other strata consideration was given to three sizes of settlements classified in the following manner: settlements having a population of less than 150 persons, settlements having a population greater than 150 and less than 450 persons, and settlements with a population of over 450.

The sample for a Sickness Survey in Newfoundland was drawn from each of these three classifications of settlements. Even though the difficulty of accessibility for the small settlements was of major importance, these settlements were sampled not only because they comprise a significant proportion of the population but also because some may be possible pockets of disease.

Within the chosen districts a sample of the three classifications of settlements was randomly selected.

The objective in any stratified sampling procedure is to select a sample from each stratum so as to represent that stratum as well as possible. The usual practice in subsampling, however, is to direct the subsampling within a selected primary sampling unit in such a manner as to obtain a sample that is as representative as possible of that particular unit.

In the case of Newfoundland, an improvement is brought about by modifying the sub-sampling within the selected unit in so far as is possible to represent the stratum from which the unit was selected, rather than the particular unit that happened to be included in the sample. This was accomplished by the allocation of different sampling ratios to different classifications of settlements, or substrata, within the selected primary unit, a method which is termed "area substratification".*

Selection of Sample Households

The next stage in the sampling process is the selection of the sample of households within the chosen primary sampling units. The sampling method used will depend primarily on the availability of basic data, such as household directories, tax rolls, etc., and on the completeness of such data.

*A New Sample of the Population—M. H. Hansen and W. N. Hurwitz.

Consider the case where there is an absolutely complete list of households in the unit. This list must include all the households, both tenant and owner-occupied. If the unit consists of a single municipality and the tax records of that municipality are available and are guaranteed complete, the sample selection is a very simple matter.

Systematic sampling is probably the most feasible method of obtaining a representative picture of the unit. A systematic sample is drawn by first selecting a random number between 1 and k where 1/k is the sampling ratio. If the random number turns out to be n, then the (n)th, the (n + k)th, the (n + 2k)th, etc. households are drawn into the sample. For example, suppose that in the proportionate sample for Nova Scotia the sampling ratio specified for a chosen unit is 1/27 and the random number obtained from a table of random numbers turns out to be 5, then the sample consists of the 5th, 32nd, 59th, etc. households on the list in the order in which the list is made up. It is essential in this case that there is no tampering with the order of listing after the random number has been selected.

If, for any reason, the household chosen appears to be non-typical, this constitutes no reason for rejecting it since the sample must contain a due proportion of non-typical households if it is to give the results desired. For instance, if the house turns out to be vacant the enumerator would be instructed to follow this house throughout the course of the survey in the event that someone would move into it. Vacant houses that are turned up in the sample in this way are, over the province as a whole, representative of those vacant houses in the municipalities that were not drawn into the sample.

There may be an apartment house in a municipality which is recorded as a single piece of property for tax purposes. If the apartment house contains more than two or three households, each household should be listed separately in the list before the systematic sample is chosen.

It may be that the only material available is out-of-date, but not badly out-of-date. For instance, the tax rolls may have been revised periodically so that the list of households from a city directory may refer to a period two, three, or five years previous. Or it may be that a list is available referring to the present date but which is suspected may have missed a few households here and there. One way of making use of such incomplete information is to set up the entire municipality in such a way that there is a continuous line from the first house listed to the last. This line would then include any intermediate houses that might have been missed in the original listing.

Whatever the method of ordering, the choice of sample households could be made as though the list were complete but with the difference that in addition to listing the households chosen by the systematic selection the enumerator will cover the chosen households and any others that he finds up to, but not including, the next household that was listed on the incomplete list. For example, suppose the household at 90 Main Street has been selected and the next house listed on the path of the enumerator is 98 Main Street; this is the next household on the incomplete list, not the next sample household. The enumerator would be instructed to enumerate the household at 90 Main Street and all households, if

any exist, between 90 and 98. Incomplete lists are usable in this way only if the missing households are scattered throughout the area and their number is small in comparison with the total number of listed households. If the missing households consist of a large block at one point, then while strict adherence to the method described above might permit an unbiased choice the variance could be very serious. A separate sampling of large blocks is recommended in this case and the sample for the remainder of the municipalities could be chosen from the list which is available. If the list available is not trustworthy enough to be used even in the manner described above, recourse must be made to maps.

Should fairly recent topographical maps or aerial photographs be on hand, the matter is dealt with effectively by drawing boundaries around units containing about three households, and from this list of "clustered" households a systematic sample may be drawn. The term "cluster sampling" has been applied to sampling in which the units are aggregates, or clusters, of the natural units. This method of sampling, often used in rural areas where recent maps are available, effectively reduces the cost of travel for the enumerator. In the clustering of the sample, care must be taken that the boundaries for each cluster are readily defined in the field to minimize the possibility of over- or under-enumeration.

Even in the case where a complete list of households is available, clustering of households in the sample may be desirable if the interviews are likely to be short and the households are distant from one another. In such cases an interval, not of "k" if 1/k is the sampling ratio, but "3k", could be used in the systematic selection, and the selected household as well as one on either side of it, making three in all, would be chosen as the selected cluster.

Should no maps or reliable lists be available, there will be no alternative but to list all the households in the municipality in the field and make a systematic selection from this specially made list in the manner already described.

The selection of the strata, of the primary sampling unit, and of the household involves a clear understanding of sampling procedure. The scientific sample will provide estimates whose accuracy can be specifically calculated and the data provided by such a sample are of value in their indication of the trends in the total aggregate or "universe". The interpretation of the data must be handled with extreme care, for the work of a statistician is much like that of the map-maker who presents the traveller with a sketch of important highways showing the locations of towns and other geographical features. A sample, like a map, is not reality. A map shows cities as dots and rivers as lines. It has purposely omitted the interesting details of scenery and the still more important features of human interest which lie along the route and which constitute the traveller's real objectives. Nevertheless, as a means of reaching these objectives the map is extremely useful. So it is with statistics and sampling, which are becoming increasingly important with the growing complexity of society.

Isotopes—A New Public Health Problem

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THE Chalk River Atomic Energy Project has been established by the Canadian Government to provide means for studying materials which can be made in an atomic pile or nuclear reactor. The term "radioactive" is often applied to many of these materials. Only one or two of these many radioactive substances are considered to be possible sources, in the future, of large amounts of energy which may be used for industrial purposes. These materials, however, provide the reason for the name atomic energy. An important and immediate purpose of Canada's Atomic Energy Project is the production of a class of radioactive materials known as "isotopes" of natural elements which are being used at the present time chiefly in research laboratories. However, there are many possible applications of radioactive isotopes in industry and, as time passes, it is likely that these materials will be found in many commercial plants.

By way of introduction, I shall review some of the chief facts about radioactivity. After these points have been considered, I shall then deal with the radiation hazards which may be encountered in the use of radioisotopes and the methods used in Canada to make the use of isotopes safe from the health standpoint.

I. RADIOACTIVITY

Radioactivity was discovered by Becquerel in 1896 and a very important radioactive substance named radium was discovered in 1898 by the famous woman scientist, Madame Curie. It was soon found that radium gave off very penetrating rays which were called gamma rays. This radiation is given off continuously by radium and many other radioactive materials, and man has no way of stopping this process, which is known as radioactivity. In addition to gamma rays, radium gives off continuously two kinds of very small particles, known as alpha and beta (also known as rays).

The gamma rays are somewhat similar to X-rays and they have great penetrating power. Gamma rays are stopped by certain substances but can go through relatively thick layers of most materials. Very dense materials like lead, however, are more effective for stopping gamma rays and this substance, in the

Presented before the Sanitation Section at the thirty-eighth annual meeting of the Canadian Public Health Association, held in the King Edward Hotel, Toronto, June 12-14, 1950, in conjunction with the first meeting of the Ontario Public Health Association.

form of thick sheets or bricks, is used a great deal to protect (shield) people and certain special kinds of apparatus from gamma rays. For example, radioactive substances which emit gamma rays must be shipped and stored in special lead containers several inches in thickness, the exact thickness depending upon the amount of radioactive material shipped and the intensity of gamma rays.

The alpha particles are not very penetrating and nearly all of them can be stopped by a sheet of aluminum metal about two-thousandths of an inch thick or by an ordinary sheet of writing paper. On the other hand, beta particles have much greater penetrating power than alpha particles. However, nearly all beta particles are stopped by a sheet of aluminum one-third of an inch in thickness.

Every radioactive substance has a so-called half-life which is the length of time needed for one half of it to lose its radioactivity. The half-life of radioactive substances may vary from a few seconds to hundreds of years. For example, a radioactive isotope of the element carbon known as carbon 11, has a half-life of 21 minutes, sodium 24 has a half-life of 14.8 hours, phosphorus 32 has a half-life of 14.3 days, cobalt 60 has a half-life of 5.3 years, and carbon 14 has a half-life of 6000 years.

II. Radiation Hazards

Experience has shown that radioactive isotopes may involve a hazard to health unless adequate precautions are taken.

Many radioactive isotopes are dangerous when inhaled or ingested, some even in amounts so small as to be invisible. Larger though still very small amounts may also be dangerous through the external effects of their radiations. When such substances are handled without proper precautions, bodily damage may result, not immediately but hours, days, or weeks later.

The chief hazards encountered in handling radioactive isotopes arise from:

(1) Deposition of radioactive materials in the body.
(2) Exposure of the body to gamma radiation.
(3) Exposure of the body to beta radiation.

(1) *Deposition of Radioactive Materials in the Body*

This is probably the most serious hazard likely to be encountered and may result from the following:

1. By inhaling air containing radioactive materials.
2. By eating materials containing radioactive substances.
3. By absorbing a solution of radioactive substance through the skin (e.g. uranium salts).
4. By absorbing radioactive materials into the blood stream through a fresh cut or break in the skin.

The permissible amounts of radioactive materials, known as tolerances, which can be taken into the body are very small and all possible precautions should be taken to avoid getting these substances into the system.

(2) *Exposure of the Whole Body to Gamma Radiation*

Medical doctors and research scientists have been working with X-rays and radium for about forty years and in that time they have discovered much

information regarding the effect of X-rays, gamma rays, alpha and beta particles upon the human body. As a result of the experience gained in working with radium and from certain experiments with animals, it is now known how much radiation the body can receive without permanent injury.

Gamma rays and X-rays are very penetrating and excessive amounts of these radiations can do serious harm to the body. A unit known as the roentgen has been adopted for measuring X and gamma radiation. This unit is usually represented by the letter r. The exact scientific definition of the roentgen can be found in books on radiology. The permissible daily exposure for people who may be exposed to radiations in their work, day after day, for many years is 0.05r per eight-hour day. This small amount of radiation is about the same as two chest X-rays. Of course, a person may receive many times the permissible daily exposure in a short time (15 to 30 minutes) and still not suffer any damage to the body.

At the present time the chief radioactive materials found in industry which emit strong gamma rays are radium and a radioactive isotope of the metal cobalt, known as cobalt 60. Of course, as industry finds uses for radioactive isotopes, it is likely that other gamma emitters will be found on the premises of commercial concerns.

(3) *Exposure of the Body to Beta Radiation*

When the body is exposed to an external source of beta radiation, only the top layers of the skin up to a few millimeters in thickness are irradiated. However, for safety, the limiting general exposure to external beta radiation should be taken as 0.30r per week in the surface layers.

It is evident from the preceding discussion of the possible radiation hazards encountered in dealing with isotopes that it would be well to have rather strict control over the distribution of these new and useful by-products of the atomic pile. As soon as it was evident that radioactive isotopes would be available from Canada's atomic energy project at Chalk River, senior officials of the National Research Council, with the assistance of prominent members of the medical profession, drew up a procedure for distributing radioactive isotopes throughout the country.

III. Procedure for Obtaining Isotopes from Chalk River

(a) *For Research*: Already at universities and government laboratories isotopes have been found to be extremely useful research tools in the study of many complex problems. When isotopes became available for general distribution throughout the country, it was decided that recognized scientists could secure up to one millicurie of most radioactive isotopes without having any special facilities. However, in the case of certain dangerous isotopes, such as strontium 89, only one tenth of a millicurie can be shipped to those scientists having only ordinary facilities. Any institution or industry desiring more than one millicurie in one shipment must prepare special facilities for handling radioactive materials. Minimum requirements for such special facilities were drawn up by the National Research Council in 1947 and they must be inspected and approved before the

Isotope Branch of the National Research Council at Chalk River will ship more than one millicurie of any isotope. At the present time, the inspection and approval of institutions or industries using pile-produced isotopes is done by the Health Radiation Section, Industrial Health Division of the Department of National Health and Welfare.

Users must adhere to certain regulations regarding health precautions and contamination control, and the facilities for handling radioactive isotopes are inspected at regular intervals to make sure that the health regulations are being carried out.

(b) *For Medical Use*: There appear to be a number of applications of radioactive isotopes in medicine. It will be appreciated that considerable care will be necessary in the medical application of these new techniques. A physician wishing to treat a patient with an isotope should contact a hospital which has been equipped and staffed to handle radioactive materials.

(c) *For Industrial Applications*: As already mentioned, the chief radioactive materials found in industry are radium and a radioactive isotope of the metal cobalt, known as cobalt 60. However, it appears likely that industry will soon find uses for other radioactive isotopes and already the Health Radiation Section, Industrial Health Division of the Department of National Health and Welfare, has considered an application by a large paper company for the use of a radioactive isotope as a tracer in studying the processes in their plant. Details of the use of this radioactive isotope in the paper plant have been carefully reviewed and given temporary approval by the Health Radiation Section. When the actual application takes place, an officer of the Health Radiation Section of the Department of National Health and Welfare, along with a scientist from the Industrial Health Division of the province concerned, will visit the plant to make sure that all personnel handling the material will not be exposed to any danger and furthermore, that the amount of radioactive material appearing in the finished product will be many times below a possible health hazard.

When isotopes become widespread in industry there may be problems concerning the disposal of radioactive waste, water contamination, neighborhood contamination and atmospheric contamination. All public health officers should be aware of such problems and should know how to control them as they arise.

It is evident that much thought has been given to the environmental control of the use of radioactive isotopes in research, medicine and industry, but it is important to realize that there should be a careful clinical control when people are dealing with the radioactive materials, or machines producing hazardous rays.

IV. Clinical Control

All personnel whose work involves frequent exposure to radiation should have regular medical examinations including adequate hematological investigation at intervals of from three to six months.

A complete hematological investigation should be made by a qualified person before any individual commences work involving routine exposure to radiation. This investigation should include hemoglobin, red-cell count, white-cell

count, packed cell volume, differential count, and a note as to the abundance of platelets in the blood smear. Of course, no one should be employed in work involving routine exposure to radiations who shows pertinent abnormalities in the blood picture. The blood examination should be given at regular intervals of from three to six months during employment, with more attention given to any departures from the individual's hematological base-line rather than to absolute values.

Summary

An attempt has been made in this paper to indicate that the use of isotopes in research, medicine and industry may result in a number of public health problems. The Department of National Health and Welfare has recently established a Health Radiation Unit in its Industrial Health Division to assist in dealing with health problems involved in the use of hazardous radiations produced by radioactive materials or X-ray machines. It is likely that as these problems become more numerous, other health radiation units will be set up by provincial health departments. Public health officers should become aware of any health radiation problems in their communities and, if they are unable to cope with them, assistance should be secured from a health radiation unit.

The Ontario Interdepartmental Nutrition Committee: Progress Report for 1949-50

Membership of the Committee:

Department of Agriculture: Miss Anna P. Lewis and Miss Anne Lawson
Department of Education: Miss Mary A. Clarke and Miss Olive M. Brownlee
Department of Health: Dr. D. S. Puffer and Miss Edna L. Moore
Department of Public Welfare: Mr. J. S. Band
Chairman: Dr. E. W. McHenry, Department of Public Health Nutrition, University of Toronto
Secretary: Mrs. Lillian Shier, Department of Public Health Nutrition, University of Toronto

THE Ontario Interdepartmental Nutrition Committee was organized in the fall of 1948 with representatives of the four Ontario Departments of Agriculture, Education, Health, and Public Welfare. The formation of the committee was approved by the Deputy Ministers of those departments. The functions of the committee were set forth as follows:

a. The planning of nutrition activities.
b. The preparation and distribution of nutrition material.
c. Consideration of the most effective methods for the use of nutrition material.

In a report prepared in March, 1949, a description was given of the activities of the committee during the first six months. A survey of existing nutrition material, in use at that time by various agencies in Ontario, showed that over 150 items of material were being employed and that the general effect was one of confusion and contradiction. The survey indicated clearly the need for co-ordination of effort to eliminate, as far as possible, the multiplicity of diverse statements being made to the public. The most urgent need demonstrated by the survey was to supply simple, definite information to teachers, nurses, doctors, dentists, welfare workers and home economists so that a clear picture could be presented by them to the public. The committee concluded that "the desired improvement (in food habits) can be achieved more successfully by ascertaining the most urgent problems and by attacking these by co-ordinated but not necessarily unified efforts".

To commence its efforts in co-ordination of nutrition education the committee decided that uniform recommendations regarding the use of food would be employed by the four represented departments and communicated to other agencies. For general purposes "Canada's Food Rules", as approved by the Canadian Council on Nutrition, would be used.

It seemed advantageous to focus attention on one aspect of nutrition education in order that greater progress might result from concentration of effort. The aspect selected was the nutrition of children. The field was further restricted to permit emphasis on apparent needs. A number of surveys of food habits of children in Ontario, and indeed elsewhere in Canada, have shown that the most prevalent faults are inadequate use of milk, of sources of vitamin C and of vitamin D, and too generous consumption of sweet foods. In the spring of 1949 the committee decided to initiate a program of nutrition education with "Canada's Food Rules" as the general objective but with concentrated attention to a four-point program for children. Prevalent food habits in Ontario make it unnecessary to urge the use of meat, potatoes, bread, and several commonly used vegetables. The plan adopted by the committee places emphasis on the foods which are neglected frequently. The four-point program is as follows:

1. At least a pint of milk a day for every child.
2. A serving of an excellent source of vitamin C every day.
3. Sufficient amount of a vitamin D preparation to furnish 400 units per day.
4. Decreased use of sweet foods, such as cake, pastry, candy and soft drinks to save money, to avoid a diminution in appetite for healthful foods, and to decrease tooth decay.

Initiation of the Four-Point Program

Since the principal function of the committee is to provide leadership in nutrition education and since the actual processes of nutrition education must be carried on by many different professional groups, the committee decided to call a conference of representatives of organizations concerned with nutrition education which operate on a provincial basis. Invitations for a conference on June 3, 1949, were sent to thirty organizations. After the presentation of the program there was a general discussion and all representatives agreed to request the support of the respective organizations.

The success of the first conference and the desirability of ascertaining the extent of co-operation caused the committee to arrange a second meeting, which was held on November 8, 1949. The statements made by those present were most encouraging and a number of constructive suggestions were offered.

The Monthly Bulletin

The survey of nutritional material conducted by the committee indicated that there was no lack of material for use by the public, although many professional people concerned with nutrition education did not know where material could be obtained. The survey showed that the primary need was to supply to professional persons simple, definite and reliable basic information which could be used in educating the public. To fill this need the committee decided to prepare and distribute a bulletin each month during the fall, winter and spring of 1949-50. The subjects were as follows:

October, A Letter of Introduction
November, Milk for Children
December, Vitamin C

January, Vitamin D
February, Less Sweet Foods—More Food Value
March, A Good Breakfast for Every Child Every Day
April, Good Nutrition in the Summer

The average distribution per month was 4,000. The bulletin was sent to all Women's Institutes and to staff members in the Department of Agriculture, to all elementary and secondary school inspectors, to all teachers of home economics and to principals and teachers of physical and health education in secondary schools. Special arrangements were made by the Department of Education to send copies to teachers in training in Normal Schools. The bulletin was sent to all medical officers of health and to all supervisors of public health nursing. The bulletin was distributed to all welfare field workers, to the staffs of the Old Age Pensions, Mothers' Allowance and Unemployment Relief Branches of the Department of Public Welfare, to superintendents of homes for the aged and of Children's Aid Societies, and to fifty welfare administrators. It was not possible for the committee to effect a highly desirable distribution to all teachers in elementary schools, and this lack was somewhat offset by supplying synopses to periodicals received regularly by teachers.

All of the members of the committee took an active part in preparing copy for the bulletins and all issues were examined in detail by the committee prior to publication. Every effort was made to use simple, direct statements, and to restrict the bulletins to essential information so that they would be brief. The format was altered for each issue to prevent similarity of appearance, and large type was employed for readability.

Since the committee did not have an established appropriation for its activities, the printing of the bulletin and the supply of paper was contributed by the Department of Health. Each of the four represented departments made available $400 to defray the costs of envelopes, postage and clerical assistance. The actual mailing was done in the office of the chairman of the committee in the University of Toronto.

Publication of a Booklet

A great many requests for copies of monthly bulletins were received by the committee. It was realized, also, that a very serious gap in the distribution of the bulletin resulted from the inability to send the bulletin to each elementary school teacher in the province. In view of both situations the committee decided to assemble the material presented in the bulletins in a booklet designed for professional persons. The booklet was entitled "Good Food for Every Child" and has had a distribution to date of about 40,000 copies. These have been sent to all school inspectors, to the principals and teachers of all elementary schools, to all teachers of home economics and of physical education, and to the senior staff of the Department of Education. A copy has been sent to each medical officer of health and to all public health nurses. The Department of Public Welfare distributed some 400 copies to welfare staffs and related personnel. A copy was mailed to all of the 5,600 physicians in Ontario. The Ontario Dental Association sent a copy to every dentist in Ontario. About 2,000 copies were

used to supply the staffs of a number of voluntary agencies. To date 3,000 additional copies have been requested and it is probable that the total printing of 50,000 copies will be exhausted shortly.

The committee invited comments and criticisms of the booklet. So far no adverse criticism has been received but there have been a number of letters commending the simplicity and clarity of the presentation.

Financial Arrangements and Plans for 1950-51

Through the Ontario Department of Health a request was made for an allocation from the Public Health Grants of the Department of National Health and Welfare. The committee is glad to report that the desired allocation was made. This has permitted the publication and distribution of "Good Food for Every Child" and will enable the committee to carry out the following plans for the current season:

1. Distribution of a monthly bulletin. The two first issues will be devoted to suggestions for effective nutrition education. Other issues will deal with school lunches and with sources of recommended educational aids.
2. Preparation and distribution of a booklet on nutrition in pregnancy. Copy will be submitted to leading obstetricians and will not be used without their approval. It is proposed to distribute this booklet to all physicians, all dentists, all public health nurses, all teachers of home economics, and all welfare workers in Ontario.
3. Initiation of material relating to nutrition of older people. The committee plans to assess needs and to assemble material but not to attempt its distribution during 1950-51.

Co-operation with the Toronto Nutrition Committee

At about the time of the institution of the Ontario Interdepartmental Nutrition Committee there was organized the Toronto Nutrition Committee to co-ordinate the nutrition education activities of the Toronto Department of Health, the Toronto Department of Welfare, and a number of voluntary organizations. The chairman of the provincial committee was invited to be a member of the Toronto committee and has served as liaison. The Toronto committee adopted the same program as the provincial committee and has been very active in the city.

Effectiveness of Nutrition Education

Obviously it is of importance to the committee to determine whether its efforts have been useful. The estimation of the effectiveness of any procedure in nutrition education is difficult. However, a number of observations can be made.

The primary objective of the committee was to co-ordinate the nutrition education activities of the four concerned departments of the Ontario Government; that objective has been achieved. A unified attack is being made to improve the food habits of Ontario children. Several voluntary agencies have submitted material to the committee before issuance. The program has been

advanced in Greater Toronto by co-operation with the Toronto Nutrition Committee.

There is considerable evidence that interest in nutrition has been increased greatly. The committee has received a great many letters displaying interest and requesting assistance. Invitations for speakers to deal with nutrition have markedly increased within the past year. The Women's Institute Branch and Home Economics Service of the Department of Agriculture was requested to discuss "Foods that Healthy Children Like" at 140 meetings in 59 districts of Ontario, and Miss Lawson, Supervisor of Nutrition, has expressed the opinion that "We feel that the large number of requests for this service was due, in part, to all Institutes receiving the bulletins of the committee last year." The Department of Agriculture prepared a special leaflet, "Foods that Healthy Children Like", for distribution at the many requested meetings.

The committee cannot say that the food habits of children in Ontario have been altered by its educational program but it can report that a concerted effort in education has been initiated, that simple, definite basic information on nutrition has been made available to 40,000 professional persons in Ontario, and that there is evidence in a large number of letters that the recipients have received the information with appreciation. It can be said that interest in nutrition has been increased.

Parasitic Infections in the Eskimos at Igloolik, N.W.T.[1]

MALCOLM BROWN, J. E. GREEN, T. J. BOAG[2] AND E. KUITUNEN-EKBAUM[3]

IN August 1949 a medical survey was made of a group of Eskimos at Igloolik, Northwest Territories, by the Queen's University Arctic Expedition. The Eskimos in this region live a more primitive life than those on Southampton Island who have been studied by us before (1, 2, 3), and have very much less frequent contact with the white man. At the present time there is a group of over 300 who trade at the Hudson's Bay Company post at Igloolik, and the fact that in the year preceding our visit they had bought less than a ton of flour provides some indication of the extent to which they adhere to their own old way of life. For the last two years it has been possible for them to trade at Igloolik; before that they had to make a 300-mile journey to the post at Arctic Bay and were even more isolated. About 170 Eskimos moved their tents to the beach near the Hudson's Bay Company post during our time there and of these 100 were given a physical examination. The present report has to do with the findings regarding parasitic infections in a group made up mainly of those who were examined clinically.

Intestinal Parasites

NIH Swab Examinations

NIH swab examinations were made in 60 individuals, 40 males of various ages and 20 females under 14 years of age. The swabs were taken by one investigator at various times of the day during the course of the routine clinical examination, and only one swab was taken from each subject. In the female group, 4 of the 20 swabs examined showed ova of *Enterobius vermicularis*. In the 40 males examined, there were 16 positive swabs (Table I). In this survey,

TABLE I

Results of Examination of NIH Swabs for *Enterobius vermicularis* in 40 Males

	Ages							
	1-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69
No. of subjects.....	12	7	5	5	3	2	4	1
No. of positive swabs.....	0	2	2	3	3	1	4	1

[1]*This work was supported by grants from the Department of National Health and Welfare and from the Defence Research Board.*

[2]*Members of Queen's University Arctic Expedition 1949, Department of Medicine, Queen's University.*

[3]*School of Hygiene, University of Toronto.*

the subjects were drawn from 23 families. In no one family were all the members examined, but in 5 families swabs were obtained from two members, in 6 families from three members, in 4 families from four members and from five members in 2 families. In 5 families there were positive swabs obtained from two members. Of the 17 families where more than one member was examined, only 5 families were completely negative as tested. The faecal specimens of two adult females, who were not swabbed, showed the ova of *Enterobius vermicularis* and the ova were also found in the faeces of an adult male whose swab was positive.

Examination of Faecal Specimens

Specimens of faeces were collected from 97 subjects, preserved in formalin and examined a few weeks later. The subjects were drawn from 37 families, with more than one member of the family being examined in 25 cases. Ova of a *Diphyllobothrium* species were found in 32 specimens (Table II). Twenty-two

TABLE II

RESULTS OF EXAMINATION OF FAECES FROM 97 ESKIMOS

	Ages							
	1-4	5-9	10-19	20-29	30-39	40-49	50-59	60-69
No. of subjects	12	15	28	18	7	5	11	1
Diphyllobothrium ova	1	6	10	6	4	1	4	
Endamoeba coli	2	4		1		1		
Endolimax nana	1		1	1		1		
Enterobium vermicularis ova					2	1		
Giardia lamblia	2							
Charcot Leyden crystals			1			1		

of these specimens came from 9 families where more than one member was examined and more than one infected. Nine of the families in which more than one member was examined, gave specimens which were all negative for *Diphyllobothrium*. The incidence in males and females was almost identical. *Endolimax nana* was found in 4 specimens and in 3 of these *Endamoeba coli* was also found. *Endamoeba coli* was present in a total of 8 specimens, 4 of them coming from two families in which four and five members were examined. *Giardia lamblia* was found in 2 specimens. *Charcot-Leyden* crystals were found in the specimens from two males. One was a boy of 12 years who showed an eosinophilia of 7 per cent, a negative skin test with Trichinella antigen, and a negative precipitin test. The other was a man of 50 years who had a very strongly positive skin test, a positive precipitin test, and an eosinophilia of 55 per cent.

TRICHINOSIS

Eosinophilia

Blood films were made and differential white cell counts done in 82 subjects. The percentage of eosinophiles varied from 0 to 55 per cent, with an average of 5.7 per cent. In 33 cases the eosinophile count was 5 per cent or more. Films

were examined from 21 cases whose serum gave a positive precipitin test with Trichinella antigen and in these films the average percentage of eosinophiles was 8 per cent. If, however, the case with 55 per cent eosinophiles is omitted, the average is only 5.6 per cent. In 56 cases showing a negative precipitin test, the average eosinophilia was 4.01 per cent.

Skin Tests

Skin tests were carried out on 100 subjects using "Trichinella Extract Lederle", an extract of dried, ground trichinae, diluted in buffered physiological-salt solution to a dilution of 1:3000. Intradermal injections of 0.02 cc. of this extract were made on the volar surface of the right forearm, and an injection of a control solution provided by the same firm was made on the left forearm. The injections were made at various times of the day and the arms were inspected after 20 minutes and again in 24 hours. A reaction involving a wheal on the test arm which was 3 mm. greater in diameter than the control wheal was interpreted as a positive reaction. On the basis of the earlier reading, 22 of the 100 subjects gave positive reactions; one of these had a positive reaction at 24 hours. There were 8 cases who had a positive reaction at 24 hours but a negative one at 20 minutes. Of all the positive reactors 18 gave a markedly positive and 12 a mildly positive reaction in terms of a classification previously used (3).

Precipitin Tests

Serum was collected from 101 subjects for precipitin tests with living larvae by a method previously described (3). There were 50 males and 51 females in this group and the ages ranged from 4 to 68 years. There were 28 positive tests, 15 of them only slightly positive. The results by ages are shown in Table III.

TABLE III

RESULTS OF PRECIPITIN TESTS WITH *Trichinella spiralis* LARVAE IN 101 ESKIMOS

	Age						
	1-9	10-19	20-29	30-39	40-49	50-59	60-69
Positive reaction	3	7	10	2	4	2	0
Negative reaction	10	26	15	10	4	7	1

The correlation between the results of the skin test and the results of the precipitin test, in those 67 subjects in which the two results were available, is shown in Table IV. It is difficult to explain on the basis of the usual conceptions of the significance of these tests why there should have been 8 subjects with negative skin tests and positive precipitin tests, but otherwise the results fit in with the usual ideas on the subject. In Table V the relation between age, eosinophilia, and the results of the skin and precipitin tests is set out. It appears, first of all, that subjects in the older age groups show a higher incidence both of positive skin tests and positive precipitin tests, which is not surprising. The

TABLE IV

THE RELATION BETWEEN RESULTS OF SKIN TESTS WITH TRICHINELLA ANTIGEN AND RESULTS OF PRECIPITIN TESTS IN 67 SUBJECTS

	Results of Precipitin Tests		
	Positive	Slightly Positive	Negative
Skin Test—Markedly Positive.....	2	3	11
Skin Test—Slightly Positive.....	1	1	10
Skin Test—Negative.....	5	3	31

tendency is as great, however, with respect to the precipitin test as it is with respect to the skin test, which perhaps is not what might have been expected. Secondly, it would appear that there is a very poor correlation between the degree of eosinophilia found and the results of the skin and precipitin tests, for the high average percentage of eosinophiles found in the small group who showed both a positive precipitin and a positive skin test is due chiefly to the one subject who showed 55 per cent eosinophiles. If this subject is left out of the group, the average percentage of eosinophiles is only 6.2 per cent.

TABLE V

THE RELATION BETWEEN EOSINOPHILIA, AGE, AND RESULTS OF SKIN TESTS AND PRECIPITIN TESTS

	No. of subjects	Eosinophilia	Age
Positive precipitin test and positive skin test...	5	Average 16% (2-55%)	Average 41 (24-50)
Positive precipitin test and negative skin test..	7	Average 5% (0-11%)	Average 29 (16-46)
Negative precipitin test and positive skin test..	17	Average 3.4% (0-7%)	Average 29 (9-58)
Negative precipitin tes' and negative skin test..	24	Average 4.9% (0-12%)	Average 22 (7-53)

LICE AND SCABIES

The incidence of *Pediculus capitis* was almost 100 per cent. Clinically remarkable scabetic infection, on the other hand, was present in only 3 cases. A small number gave a history of scabies in the past which had been treated successfully with remedies provided by the Department of National Health and Welfare.

DISCUSSION

These results indicate a rather high incidence of infection with *Enterobius vermicularis*. It is to be remembered that each subject was swabbed only once and that the swabs were taken at various times of the day. If it had been feasible to take more than one swab and to take them early in the morning, the number

of positive cases would certainly have been much larger. The apparent difference in the incidence in the two sexes is to be explained by the difference in ages. Swabs taken from children of less than 5 years were uniformly negative, and the incidence in subjects under 20 years is significantly less than in those who were older. The over-all incidence is very similar to that found in the Southampton Island group (3).

The occurrence of ova of a *Diphyllobothrium* species was also about the same as in the Southampton Island group (about 30 per cent). *Endamoeba coli* was, however, found more frequently in the Igloolik group, and it may be surmised that sooner or later *Endamoeba histolytica* will be found in the Eskimo population.

The evidence suggests that trichinosis is less prevalent in the Igloolik group than in the Southampton Island Group. The incidence of notable eosinophilia is less, though still remarkable by southern Canadian standards, and the positive early reactors in the skin tests constituted only 22 per cent of the group studied as compared with 46 per cent at Southampton Island. The proportion of very severe reactions with pseudopodia was also smaller. In the precipitin tests there were 28 per cent positive reactors as compared with 40 per cent, and of the positives, more than half showed only a slightly positive test.

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THE MEDICAL OFFICER OF HEALTH

THE central position in the public health organization is occupied by the health officer. He is its chief. He must also be its leader, not only knowing the problems but also evolving ways and means of solving those that lie within the range of available resources. To accomplish his task he must have an adequate staff and the active support of the physicians of the community. His work is considered so essential that his position is protected by legislation, in that he cannot be removed from office through patronage or changing administrations, but only through failure to perform his duties. Throughout Canada the position of health officer has always been filled by a physician. Provision for this was made in the original drafts of the Health Acts of the Provinces. It expresses the conviction that in the promotion of health the physician is the person qualified to provide treatment and to lead in the prevention of disease. Thus from the standpoint of authority and security, health officers in Canada have no cause for concern.

What are Canada's needs for medical officers of health? To answer this, one must consider the public health needs of the country. Dr. Haven Emerson, an outstanding public health authority, has stated that there are forty million people in the United States who are without local public health service of even the most elementary character. A similar situation exists in Canada. Less than half the population lives in urban centres or other communities where health services are provided under a full-time medical officer of health. In the Provinces there are unfilled positions for medical officers of health. What of the needs of the future when the needs of the present are not being met? Further, the enlargement of the Canadian armed services, with their requirements for physicians qualified in public health, as well as the great demand for medical officers, will add to the problem of obtaining medical officers of health in sufficient numbers for civilian services.

Through its Committee on Administrative Practice, the Canadian Public Health Association has studied the problem of providing local health services for every citizen of Canada. Each Province has developed plans through which

its entire population may have the benefits of full-time local health departments. In this planning, the Provinces have been divided into health unit areas embracing urban and rural populations, with due consideration of the many factors relevant to the successful functioning of health units. In the United States it is considered that 1,200 full-time health units would provide for the entire country. In Canada studies have indicated that approximately 250 units would provide local health services for all the people. The implementing of the Canadian plans has been advanced by the Federal grants-in-aid, through which thirty-three million dollars are being made available to the Provincial Governments for public health and hospital care. One of the major grants, designated the General Public Health Grant, provides five million dollars for new services, and through it substantial assistance can be obtained for the establishing of health units. Although because of this limitation, this grant, to date, has been used only in part by the Provinces, the wisdom of this stipulation can be appreciated in view of the grant's fundamental purpose of extending public health services.

Plans have, therefore, been made to provide the health services that are needed, and the Federal Government has made substantial provision to assist the Provinces in the extension of these services. But there is a serious shortage of public health physicians and of public health nurses. Further, as the importance of dental public health services is more fully appreciated, programs will be handicapped by the inability of health departments to obtain dentists with public health training.

In keeping with the rapidly changing picture of medical practice, the public health program in local municipalities has changed from that of twenty years ago. During these years it has become recognized that the work of the medical officer of health cannot be effectively conducted on a part-time basis. The part-time medical officer generally served a relatively small population. Today the full-time health unit provides health services for a population rarely less than thirty thousand and often more. It requires the full-time services of a physician with special training in public health and a staff of public health nurses and other essential personnel, suitably housed and equipped.

One may well ask, "What are the reasons that more physicians are not entering public health?" It must be said that public health is not the only field that is being overlooked by those who are graduating from faculties of medicine. Adequate numbers are not entering general practice—the trend is increasingly toward the special clinical fields. However, in the public health field, an inadequate scale of salaries for medical officers is a serious deterrent to those who consider a career in this branch of medicine. The salaries paid to physicians qualified in public health are substantially lower than the average incomes of physicians in general practice and much less than the incomes of specialists in clinical fields.

The Canadian Public Health Association's surveys of salaries paid public health personnel have indicated that a serious situation exists, particularly in regard to physicians in public health. The surveys have pointed out that few municipalities have salary schedules which provide periodic increases for medical officers, or, in fact, give any indication that years of service will be recognized by commensurate increases in salary. Also, few municipalities arrange retirement

allowances for the medical officer, although in those Provinces where the directors of health units are appointed by the Provincial Departments of Health, pensions are provided. A very direct contribution to the solution of the salary problem would be made if municipalities would adopt a policy of providing regular increases and pension plans for full-time medical officers and their staffs.

The undue prominence given in the press to difficulties which occasionally arise between the medical officer and members of the municipal council or other local authorities often leads to the conclusion that the medical officer occupies an unhappy position in the administration of his program. Unfortunately, successful public health administration is not the subject of headlines in the press, while the occasional reports of dissension and friction make an unfortunate and lasting impression on recent graduates who might otherwise consider this field.

When carefully analysed, the most important reason for the shortage of medical officers would seem to lie in our failure to present the opportunity for a career that public health offers the young physician. Today the successful medical officer in a full-time local health unit is primarily an administrator. The use of this term may in itself create misunderstanding, as the physician commonly associates "administrator" with an individual who occupies a desk position and is concerned with duties that do not require medical training. He feels that in such a position his medical course would not be made use of and that his work would follow routine channels offering little opportunity for new fields of endeavour.

Actually, the effective public health administrator understands the science of administration, and through it he channels the application of all his medical knowledge to bring to fruition his thoughts and plans for the advancement of the health of the community. Of necessity he must become familiar with the welfare program of his community and know its resources. He must be fully informed of hospital problems, of the work of the hospital administrator, and of the interrelationship of his department with the hospitals. With his medical and dental colleagues, he is concerned with plans for more adequate medical and dental care for the community, and with provisions for more adequate nursing care. His interests include both physical and mental illness. In the words of Wilson G. Smillie, whose text on public health administration is well known to students of public health on this continent, "The health officer of the future must be an exceptional man, with special talents and special training, for he will be called upon to assume the responsibility for matters of great importance and value to the nation. Public health administration will be a dignified and respected profession, which should attract young men and women of superior ability, and offer them a full and satisfactory life career."

In Canada and in the United States, public health is now recognized as one of the specialist fields of medicine. More than 1,200 physicians have qualified for the specialist's certificate in this field since the incorporation of the American Board of Preventive Medicine and Public Health in 1948. The Royal College of Physicians and Surgeons of Canada has made provision for the certification

of specialists in public health as part of the recognition of specialists in all fields of medicine.

The status of the medical officer of health is established. The need for qualified officers will increase if Canada's public health needs are to be met. Essential public health services for every Canadian can be provided only by physicians with special training. It is urgent that this subject be presented to all undergraduates in our medical colleges, and that the gravity of the situation be realized, if Canadian medicine is to continue to give leadership in public health.

The Canadian Public Health Association

ANNOUNCES THE

Thirty-Ninth Annual Meeting

MOUNT ROYAL HOTEL

MONTREAL

MAY 28-31, 1951

Executive Council Meeting May 28

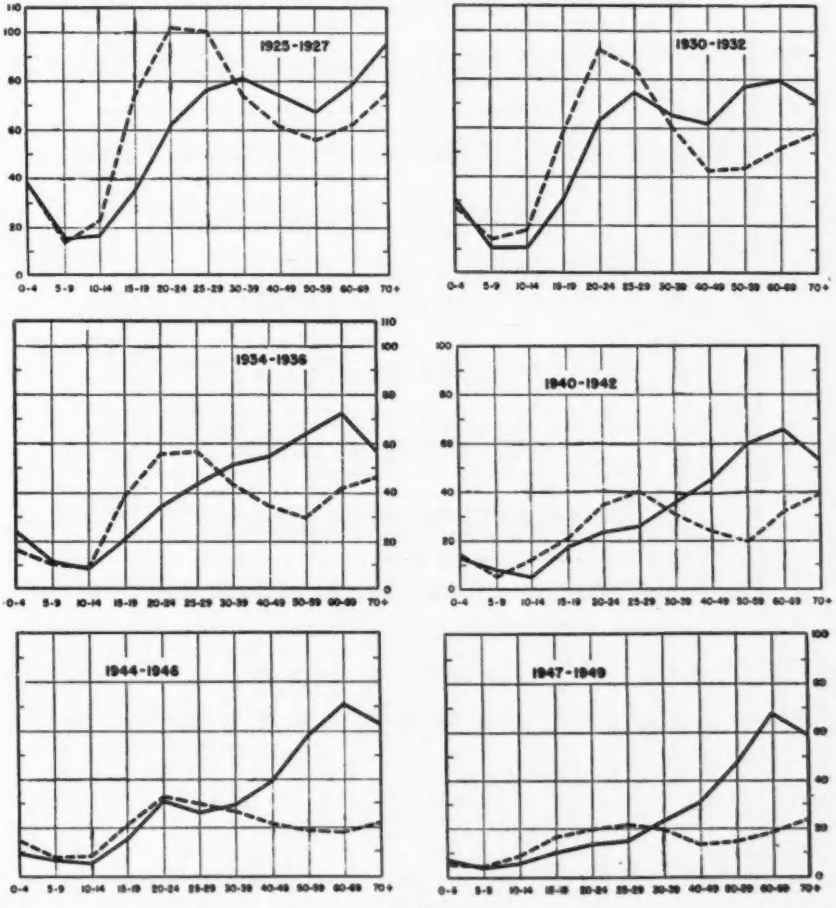
Tuberculosis Trends in Ontario

THERE have been remarkable reductions in the recorded tuberculosis mortality in Ontario during the last twenty-five years. The available data reveal some important changes in the age and sex specific tuberculosis mortality rates and in the sex ratios in mortality as well.

TUBERCULOSIS MORTALITY BY AGE AND SEX, ONTARIO, 1925-1949

RATE PER 100,000 POPULATION

— *Male* --- *Female*



TUBERCULOSIS MORTALITY IN ONTARIO FOR CERTAIN PERIODS BY SEX AND AGE GROUPS
Rate per 100,000 Population

Age Group	Sex	1925 – 1927		1930 – 1932		1934 – 1936		1940 – 1942		1944 – 1946		1947 – 1949	
		Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate	Number	Rate
0 – 4	M	175	37.7	144	30.7	110	24.2	57	12.5	50	9.0	47	7.0
	F	170	37.7	124	27.3	72	16.4	63	14.3	78	14.6	34	5.3
5 – 9	M	51	10.5	51	10.1	54	11.4	35	7.6	29	6.3	20	3.9
	F	65	13.7	69	14.0	47	10.2	23	5.2	35	7.8	21	4.2
10 – 14	M	73	16.2	51	10.5	43	8.4	22	4.5	24	5.1	26	5.5
	F	99	22.6	82	17.5	44	8.8	58	12.1	37	8.0	40	8.7
15 – 19	M	154	35.6	149	30.4	99	20.9	89	17.2	76	15.2	50	10.0
	F	310	73.8	272	58.3	175	38.3	105	21.0	104	21.2	79	16.2
20 – 24	M	246	62.6	281	63.4	168	34.1	115	23.4	159	31.0	70	13.2
	F	407	102.0	396	92.0	258	55.6	165	34.3	173	32.9	104	19.7
25 – 29	M	290	76.5	305	74.8	189	43.4	122	25.4	126	26.2	76	14.6
	F	373	100.1	326	84.4	241	56.7	187	40.0	146	29.8	111	21.3
30 – 39	M	582	81.0	498	65.2	402	51.0	299	35.0	266	29.4	219	22.8
	F	507	73.6	441	60.1	325	43.2	244	30.1	234	26.4	183	19.3
40 – 49	M	447	74.1	419	61.8	390	54.6	334	44.9	305	39.0	249	30.2
	F	345	61.5	265	42.3	228	34.0	167	23.7	159	21.4	105	13.3
50 – 59	M	293	67.7	373	76.8	350	63.3	364	59.5	377	57.9	319	46.2
	F	230	55.8	199	43.4	153	29.7	113	19.6	114	18.3	94	14.2
60 – 69	M	220	78.3	247	79.2	240	72.2	262	65.7	314	71.2	332	67.9
	F	171	62.2	159	51.1	138	41.7	127	31.8	79	18.0	87	18.1
70+	M	168	95.4	145	70.3	130	56.6	139	53.2	178	63.1	191	59.1
	F	138	74.8	125	57.3	114	46.5	113	38.5	69	21.5	85	23.4
N.S.	M	8	—	2	—	2	—	1	—	1	—	0	—
	F	8	—	0	—	0	—	0	—	2	—	0	—
Total	M	2,680	55.7	2,665	50.8	2,177	39.9	1,839	31.9	1,907	31.5	1,603	24.6
	F	2,800	59.9	2,458	48.7	1,790	34.0	1,365	24.4	1,230	20.6	939	14.7
	T	5,480	57.7	5,123	49.8	3,967	37.0	3,204	28.2	3,137	26.1	2,542	19.7

The charts illustrate the trends in tuberculosis mortality by sex and age for each of six three-year periods from 1925 to 1949. An effective picture of the secular trend for each sex and a ratio comparison of male and female tuberculosis mortality can be secured from the chart.

Perhaps the most striking feature of the chart is the flattening of the ridge of mortality among females between the ages of 15 and 39 years. Next in importance to this development has been the flattening of the hump of male mortality in the working years of life, 20 to 49 years.

The male excess in tuberculosis mortality in the age groups 40 years and over has become more sharply defined. In 1925-1927, there was a modest male excess in all age groups 30 years and over. In 1947-1949, the ratio of male to female tuberculosis mortality at ages 40-49 years was slightly more than two to one, at ages 50-59 years the ratio was slightly more than three to one, and at ages 60-69 years the ratio was 3.5 to 1. Rather more remarkable, the female excesses in tuberculosis mortality in the age groups 10 to 29 years, which were quite pronounced in 1925-1927, have to a large degree disappeared.

—A. H. SELLERS, M.D., D.P.H., and K.M. SHOREY, M.B., Department of Health for Ontario, Toronto.

NEWS

British Columbia

OCTOBER saw the opening of still another full-time health unit. Dr. L. S. Anderson, D.P.H.(Edin.), formerly of Nairobi, Kenya, has taken over as health unit director in the Trail-Rossland area. Dr. Anderson has had many years of experience in public health. He was deputy medical officer of health for Nairobi before he left to come to this province. During the war he held the rank of Surgeon Lieutenant Commander in the Royal Navy.

The Trail-Rossland Health Unit includes School districts 9, 11, 12 and 13. The main office is at Trail and sub-offices are located at Rossland and Castlegar. The public health nursing staff of the unit includes Miss Alice Beattie, supervisor of public health nursing for the East Kootenays; Miss Jean Taylor, Miss Lenna Richardson, and Miss Margene Clark at Trail, Miss June Cornell at Rossland, and Miss Miriam Cressman at Castlegar. The sanitary inspector for the unit is Mr. N. Stephenson, and Miss J. Anderson is the statistical clerk.

Alberta

MISS ENID BLAKEY, secretary-technician at the Stettler Health Unit for many years, was successful in the annual examinations for the Certificate in Sanitary Inspection (Canada), conducted by the Canadian Public Health Association. She thus became one of the few women in Canada to hold this qualification.

Saskatchewan

MR. STANLEY RANDS, M.A., of the National Film Board, Ottawa, has been appointed assistant director of health education. Along with administrative duties shared with the director, he will be responsible for co-ordination with the Department of Education and the University of Saskatchewan in matters of health education with relation to teacher training, curriculum development, and school practice. Mr. Rands holds an M.A. degree from the University of Alberta and a B.A. from Oxford University, which he attended as a Rhodes scholar. He is also a graduate of the Alberta College of Education and, after teaching high school for several years, was on the staff of the Alberta Department of Education. Subsequently he was appointed acting director of adult education at the University of Manitoba and, at the same time, acted as the National Film Board representative in the West, becoming the assistant supervisor of circuits for Canada. Since 1945, he has been co-ordinator of research and reports for the National Film Board in Ottawa.

DR. MURRAY S. ACKER, regional medical health officer for the Weyburn-Estevan Health Region, has been awarded a bursary under the Department of National Health and Welfare's professional training grant to Saskatchewan to take a year's advanced training in preventive and social medicine and public health at the Usher Institute of the University of Edinburgh, Scotland. Dr. Acker will study under the direction of Professor F. A. E. Crew, F.R.S., who is internationally known in the field of preventive medicine.

Manitoba

RATEPAYERS in hospital district no. 11 voted favorably for the establishment of a 30-bed hospital in the town of Souris, and a nursing station in the town of Hartney. Ratepayers of districts nos. 26 and 8 voted to establish a 10-bed medical nursing unit at Stonewall and a 4-bed nursing station at Sandy Lake.

OFFICERS of the Manitoba chapter of the Multiple Sclerosis Society are: president, Mrs. J. B. Rollitt; first vice-president, Mr. G. H. Dawson; second vice-president, Miss A. McKee; executive secretary, Mrs. J. G. Morton; recording secretary, Miss Joyce Simonsen; and treasurer, Mr. Robert Lancaster.

DR. WALLACE GRANT, superintendent of the Children's Hospital, Winnipeg, has received a bursary from the Federal health grants. He will study psychiatric aspects of paedi-

atrics at the Child Study Centre of Yale University, New Haven, Conn. Dr. Dobbs, assistant surgeon at the Manitoba Sanitarium, Ninette, will leave on a health-grant bursary to take a course in bronchoscopy at the University of Illinois. Others who received awards for post-graduate study in public health are: Miss Hope Towes, Brandon; Miss Jessie Williamson, St. Boniface; and Miss Mary E. Wilson, Miss Helen Oliver, Miss Lillian Fryers and Miss M. Chown, of Winnipeg.

THE OFFICIAL OPENING of the Beausejour District Hospital was held on November 18th. The health unit was built at a cost of $95,000 and contains 23 beds.

DR. A. F. W. PEART, of the Department of National Health and Welfare, Ottawa, was in Winnipeg recently to confer with Provincial health authorities about the recently inaugurated health survey and other matters.

MR. GLEN PHILLIPS, sanitary inspector of the Selkirk Health Unit, has been transferred to the Virden Health Unit.

DR. D. HOMER REA, former medical director of the Red River Health Unit, has left to study obstetrics and gynaecology at the Royal Victoria Hospital, Montreal.

DR. H. MALCOLMSON, director of environmental sanitation in the Provincial Department of Health and Public Welfare, attended the three-week A-B-C (atomic-bacteriological-chemical) warfare course at Camp Borden, Ontario, on behalf of the Department.

Ontario

SEVERAL MEMBERS of the staff of the Division of Industrial Hygiene, Ontario Department of Health, took part in the program of the joint annual meeting of the Section on Industrial Medicine, Ontario Medical Association, and the Industrial Medical Association, Province of Quebec, held at the General Brock Hotel, Niagara Falls, Ontario, on October 11, 12 and 13. Dr. C. H. Wilson discussed the industrial dermatitis compensation problem; Dr. J. E. Barnard reviewed the health hazards of the newer insecticides, and Dr. R. B. Sutherland spoke on the collection and utilization of lost-time sickness and accident records in industry. About 75 industrial physicians and surgeons from Ontario and Quebec attended the meeting. In addition to the scientific program, visitors were taken on a tour through the Queenstown Generating Station of the Hydro Electric Power Commission of Ontario. Visits were also arranged to the Gardeners' Training School and to the Ontario Paper Company at Thorold.

AT THE INTERNATIONAL Ploughing Match held in Alliston October 13-15, pocket calendars covering the period September 1950 to September 1951 were distributed among the spectators by a representative of the Division of Industrial Hygiene, Ontario Department of Health. The calendar stressed the importance of reading the caution label on insecticide containers. In this way many farmers from all sections of the Province were reminded again of the necessity of the proper handling of these poisonous materials.

Quebec

DR. PAUL CLAVEAU, D.P.H., formerly medical officer of health for the County Health Unit of Labelle, has been appointed Director of the Division of County Health Units in the Ministry of Health.

DR. P. E. ROLLAND, D.P.H., has been appointed a special medical officer of health for a group of urban municipalities on the western part of the Island of Montreal. Dr. Normand Chaput succeeds him as medical officer of the County Health Unit of Chambly.

DR. A. LORD has been appointed medical officer of health of the County Health Unit of Dorchester. Dr. L. Chenel, the former medical officer, is returning to private practice. Dr. R. Dupré is the new M.O.H. for the County Health Unit of Yamaska and Dr. G. Gauthier has been named assistant M.O.H. to Dr. Patenaude in the County Health Unit of Beauharnois.

TWELVE PUBLIC HEALTH NURSES have resigned in the past three months. Twenty-one new nurses have been appointed to the staffs of the various County Health Units.

DR. G. D. W. CAMERON, Deputy Minister of National Health and President of the Canadian Public Health Association, has appointed Dr. Adélard Groulx, Director of the Department of Health of Montreal, as chairman of the local committee in charge of arrangements for the Association's thirty-

ninth annual meeting, which will be held in Montreal at the Mount Royal Hotel on May 28th to 31st.

B.C.G. VACCINATION of new-born children is now a public health measure in this Province. With the assistance of Dr. Armand Frappier and his staff of the Institute of Microbiology and Hygiene, University of Montreal, the Ministry of Health has been training the personnel in the past twenty months. Over 65,000 children have thus been vaccinated in the first ten months of this year.

Nova Scotia

CHANGES IN THE CABINET of the Nova Scotia Government have recently been carried out. The Honourable Harold Connolly, one of the senior cabinet members, has been appointed Minister of Health. He is also in charge of the Bureau of Information for the Province.

DR. CHESTER B. STEWART, Professor of Epidemiology at Dalhousie University and Director of the Health Survey under Federal Health Grants for the Province of Nova Scotia, attended the recent meeting of the American Public Health Association at St. Louis.

A NEW APPOINTMENT in the Department of Public Health has been made with the naming of Dr. N. B. McLetchie, formerly of Regina, as Provincial Pathologist for the Province of Nova Scotia. Dr. McLetchie is also Professor of Pathology at Dalhousie University.

AT THE annual meeting of the Nova Scotia Health Officers Association, held in June of this year, a committee was set up to study the possibility of this organization's being enlarged to form a division of the Canadian Public Health Association. It was originally hoped that an Atlantic Division of the C.P.H.A. could be formed, but due to certain difficulties it was felt that the first step might well be the forming of a Nova Scotia Division.

THE HONOURABLE MR. CONNOLLY, Minister of Health, officiated at the opening of a new building for mental defectives to be operated by the Department of Welfare and located at Brookside, Colchester County, N.S.

SINCE THE RESIGNATION of Miss Margaret MacKenzie as superintendent of public health nurses for the Province, Miss Phyllis Lyttle has been acting superintendent. It is hoped that this important post may be filled in the near future.

THE SICKNESS SURVEY being carried out on a Maritime basis under the Federal Health grants is proceeding satisfactorily. This survey is under the direction of Dr. Chester Stewart and Miss Marjorie Bell.

AT THE MEETING of the Canadian Medical Association held in Halifax in June, 1950, Dr. J. S. Robertson, Assistant Deputy Minister of Health, was appointed chairman of the public health committee. It is hoped that any important matters dealing with public health problems may be referred to this committee.

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Medical Library

Canadian Journal of PUBLIC HEALTH

The National Journal of Preventive Medicine

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Volume 41 DECEMBER, 1950 Number 12

The Role of Epidemiology in Venereal Disease Control
C. L. HUNT

Application of Sampling Techniques to Sickness Surveys
D. K. DALE

The Ontario Interdepartmental Nutrition Committee
ANNA P. LEWIS AND OTHERS

Parasitic Infections in Eskimos at Igloolik
MALCOLM BROWN AND OTHERS

Isotopes---A New Public Health Problem
G. H. GUEST

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PUBLISHED MONTHLY BY THE
CANADIAN PUBLIC HEALTH ASSOCIATION
150 COLLEGE STREET, TORONTO 5

NATIONAL HEALTH WEEK

February 4th—10th

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This event in the field of health education in Canada gives health officers and their aides an opportunity to go all-out in any particular project they may be sponsoring at the time, because

- they can take advantage of the widespread national publicity accorded National Health Week;
- they can gain cooperation of press, radio and other media at a time when interest in all health matters is at a peak.

National Health Week is an annual event sponsored by the Health League of Canada, a voluntary health education association, in official cooperation with health and education departments, in an effort to make Canadians health-conscious, and appreciative of the work their health officers and their physicians are doing to promote health for the individual, the family, the community, and the nation.

Complete information about this seventh annual National Health Week observance can be obtained from the

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HEALTH LEAGUE OF CANADA
111 Avenue Rd., Toronto

"The First Wealth Is Health"